H 38 John.

Rhodora

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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 27. April, 1925. No. 316.

NOTES ON THE FLORA OF BOOTHBAY, MAINE.

Norman C. Fassett.

The coast of Maine between Casco Bay and Penobscot Bay is cut into a series of long narrow peninsulas, separated by a series of fiord-like inlets, probably due to glacial erosion. The town of Boothbay, in Lincoln County, about twenty-five miles southeast of Bath, is at the southern, *i. e.*, the seaward, end of one of these peninsulas. The most southern part of the town consists of Linekin Neck, a piece of land three miles long and varying in width from a few rods to a mile. At the end of Linekin Neck is the summer colony of Ocean Point, and off Ocean Point lie several islands. A few of these may be mentioned in some detail.

A mile south of Ocean Point is Fisherman Island, a mile long and only a few rods wide, lying almost due north and south. It rises to a height of forty feet above sea level, and is used as a pasture for cattle. It is almost treeless, and records show that it has been so for at least two centuries.

A mile and a half south of Fisherman Island is Damiscove Island, which is a mile and a half long, with the same proportions and orientation as its neighbor to the north. Thirty years ago the northern end of Damiscove was wooded, but it is now bare, and used for sheep pasturage. At about the middle of the island there is a pond a quarter of a mile long, separated from the sea only by a narrow beach. The seaward end of this pond is somewhat brackish, but the landward end is a Sphagnum bog, with *Vaccinium macrocarpon, Eriophorum tenellum,* and *E. virginicum.* It is remarkable, however, that in this same bog grows *Juncus balticus,* var. *littoralis.* This pond, and other brackish pond-holes on the island, will probably yield several interesting species with thorough botanizing.

One mile east of Damiscove Island is Outer Heron Island, which is not settled, except for some cabins occasionally used by fishermen, and cattle are pastured upon it. This island is to a large extent wooded. A mile and a half to the southward is Pumpkin Island, a small green treeless dome rising forty feet above the waves.

A few species collected by the writer on this archipelago and on Ocean Point seem worth recording. Most of the plants are represented by specimens in the Herbarium of the New England Botanical Club; figures in parentheses refer to the collector's number on the sheets so filed.

Juniperus horizontalis Moench. Not common. One small shrub in an exposed field on Fisherman Island (260), one shrub in a similar situation on Outer Heron Island (258), and one in an open field half a mile from the shore at Ocean Point (259). Also reported from Pumpkin Island.[1]

Ruppia maritima L., var. longipes Hagström; Fernald & Wiegand, Rhodora xvi. 125 (1914). New to Lincoln County; not previously represented in the Herbarium of the New England Botanical Club between Mt. Desert and the Kennebec River. Occurs on Outer Heron Island (264) in a pool of brackish water perhaps two rods from the sea, and in a similar situation on Damiscove Island (407).

Triglochin palustris L. New to Lincoln County; previously not represented between Matinicus Island and Wells Beach. In the same pool as the preceding on Outer Heron Island (257), and on the shores of the pond on Damiscove Island (405).

Puccinellia maritima (Huds.) Parl.; Fernald & Weatherby, Rhodora xviii. 6 (1916). On a small patch of salt marsh, Ocean Point (412), and on Squirrel Island, a mile to the eastward. Previously not known in Maine east of Cumberland Foreside.

Carex umbellata Schkuhr. Ocean Point (233). New to Lincoln County.

Arceuthobium pusillum Peck. Abundant on *Picea canadensis* at Outer Heron Island (404) and Ocean Point. Usually confined to the border of the forest along the sea margin, controlled perhaps by moisture in the air.

Chenopodium album L. (413) and Sonchus oleraceus L. (2304). At Ocean Point these species grow on the cobblestone beach, where there is scarcely any soil, and make a luxurious development. *Cheno-*

[1] Norton, Rhodora xv. 138 (1913).

podium grows 1.5 meters high, and *Sonchus* attains a height of 2 meters. This is apparently due to the dilute salts from the ocean spray, and to the fertilizing effect of dead eel-grass and sea-weeds.

Fragaria virginiana Duchesne, var. terrae-novae (Ryd.) Fernald & Wiegand. Occasional on Outer Heron Island (401), and at Ocean Point (430).

Rubus Andrewsianus Blanchard. Ocean Point (826). In Maine previously known only from Orono and from Rockport.[1]

Rubus jacens Blanchard. Ocean Point (499). Previously known in Maine only from York County, and approached by material from Oldtown.

Coelopleurum lucidum (L.) Fernald, forma frondosum Fernald. Occasional at Ocean Point.

Mertensia maritima (L.) S. F. Gray. Stony beach, Damiscove Island (409). In 1920 this species was growing in crevices in the rocks at Ocean Point; in 1923 I could not find it at this locality.

Eupatorium perfoliatum L., forma **truncatum** (Muhl.) n. comb. *E. truncatum* Muhl. in Willd. Sp. Pl. iii. 1751 (1804). *E. salviaefolium* Sims, Bot. Mag. 2010 (1818). *E. perfoliatum*, var. *truncatum* Gray, Syn. Fl. N. Am. i. pt. 2: 99 (1884). Occurs occasionally with the typical form at Ocean Point.

Eupatorium perfoliatum L., forma **trifolium**, n. f., foliis ternatis connatis sicut apud formam typicam vel liberis sicut apud formam *truncatum* saepe oppositis vel in ramis alternis.

Leaves in whorls of 3's, connate as in the typical form or distinct at the base as in forma *truncatum*, often opposite or alternate on the secondary axes.—Quebec: tidal shores of the St. Lawrence River, St. Augustin, August 7, 1923, *Svenson & Fassett*, no. 2051. Maine: tidal shores of the Kennebec River, Bowdoinham, August 24, 1921, *N. C. Fassett*, no. 343; Ocean Point, September 8, 1921, *N. C. Fassett*, no. 346. Massachusetts: Needham, August 22, 1886, *Ella M. Fuller* (type in Herb. New England Botanical Club).

Professor J. F. Collins records having found this form,[2] saying: "The leaves of each whorl were united about the stem much as in the usual form, except that there was a superfluity of tissue at the points of contact, thus making the bases of the leaves crispate." This is often the case, although the leaves are sometimes free from each other at the base.

[1] C. A. E. Long, Rhodora, xxiv. 181 (1922).
[2] Bot. Gaz. xi. 341 (1886).

In a clump of *E. perfoliatum* growing on the estuary of the Kennebec River, there were several stems arising in one clump; one was forma *trifolium*, a second had five solitary leaves, one set of two leaves at an angle of 120 degrees, and five pairs of opposite leaves, while the rest of the stems in this clump bore normal foliage. Near the specimen collected at Ocean Point was an individual which had the leaves alternate, connected by a broad wing spiraling about the stem.

Aster longifolius Lam., var. villicaulis Gray. A few plants in a thicket at Ocean Point (429). This appears to be the first collection in Maine on the coast.

Bidens frondosa L., var. anomala Porter. Abundant at Ocean Point along the shore, on cobblestone beaches or in crevices in the rocks. Also at Squirrel Island (408) where it is sometimes found with the typical form of the species. Previously reported in Maine only on the tidal reaches of the Androscoggin River. I have seen it on rocky shores bordering salt water at Woolwich.

Graduate School of Arts and Sciences, *Harvard University*.

FOURTH REPORT OF THE COMMITTEE ON FLORAL AREAS.

Our previous reports (Rhodora xx. 181–185, 193–197; xxii. 80–89; xxiii. 209–220) have dealt with pteridophytes and with a family of flowering plants, the *Ranunculaceae*, most of the New England members of which are spring-flowering, woodland species. It was felt that, this time, it might be of interest to consider a group of summer- and fall-flowering plants; and the early genera of the *Compositae*, through *Solidago*, were accordingly chosen.

In nomenclature, we have followed Prof. Wiegand's revision of the verticillate *Eupatoria*. We have taken up the earlier names *Solidago suaveolens* and *S. humilis* in place of *S. odora* and *S. uliginosa*, and, following Prof. Fernald, have treated *S. aspera* and *S. neglecta* of the Manual as varieties of *S. rugosa* and *S. uniligulata* respectively. One minor variety has been reduced to formal rank (following Mr. Fassett) and four (*Solidago Randii*, var. *monticola*, *S. juncea*, var. *scabrella*, and the two varieties of *S. caesia*) have been omitted altogether as hardly deserving of any recognition. Otherwise, the Manual names stand unchanged—plus species and varieties recognized or detected within our area since 1908. As before, varieties which

show no distinctive ranges are omitted from the geographic treatment.

PRELIMINARY LISTS OF NEW ENGLAND PLANTS—XXIX.

[The sign + indicates that an herbarium specimen has been seen; the sign — that a reliable printed record has been found.]

COMPOSITAE. I. VERNONIEAE	Me.	N. H.	Vt.	Mass.	R. I.	Conn
Vernonia noveboracensis Willd.				+	+	+
II. EUPATORIEAE.						
Eupatorium aromaticum L.				+	+	+
" falcatum Michx.		+	+	+	+	+
" hyssopifolium L.				+	+	+
" leucolepis T. & G.				+	+	
" maculatum L.	+	+	+	+		+
" " var. foliosum (Fernald) Wiegand	+	+	—			
" perfoliatum L.	+	+	+	+	+	+
" " f. purpureum Britton	+			+		
" perfoliatum f. truncatum (Muhl.) Fassett[1]			+	+	+	—
" pubescens Muhl.	+	—		+	+	+
" purpureum L.	+			+	+	+
" rotundifolium L.				+	—	
" sessilifolium L.		+	+	+	+	+
" urticaefolium Reichard	+	+	+	+	+	+
" verbenaefolium Michx.		—		+	+	+
" verticillatum Lam.	+	+	+	+	+	+
Liatris pycnostachya Michx.				+		
" scariosa Willd.	+	+		+	+	+
" spicata (L.) Willd.				+		
Mikania scandens (L.) Willd.	+	—		+	+	+
Sclerolepis uniflora (Walt.) BSP.		+		+	+	
III. ASTEREAE.						
Chrysopsis falcata (Pursh) Ell.				+	+	+
Grindelia lanceolata Nutt.						—
" robusta Nutt.				+		
" squarrosa (Pursh) Dunal	+	+		+	+	+
Solidago altissima L.	+	+	+	+	+	+
" arguta Ait.	+	+	+	+	+	+
" × asperula Desf.	+	+		+	+	+
" bicolor L.	+	+	+	+	+	+

[1] See RHODORA XXVII, 55.

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Solidago caesia L.	+	+	+	+	+	+
" calcicola Fernald	+					
" canadensis L.	+	+	+	+		+
" " var. gilvocanescens Rydb.			+			
" canadensis var. Hargeri Fernald			+	+		+
" Cutleri Fernald	+	+	+			
" Elliottii T. & G.				+	+	+
" " var. divaricata Fernald					+	
" erecta Pursh				+		
" graminifolia (L.) Salisb.	+	+	+	+	+	
" " var. Nuttallii (Greene) Fernald	+	+	+	+	+	+
" hispida Muhl.	+	+	+	+		+
" humilis Pursh	+	+	+	+		+
" juncea Ait.	+	+	+	+	+	+
" latifolia L.	+	+	+	+	+	+
" lepida DC., var. fallax Fernald	+					
" lepida DC., var. molina Fernald	+					
" macrophylla Pursh	+	+	+	+		
" " var. thyrsoidea (E. Mey.) Fernald	+	+				
" minor (Michx.) Fernald				—		
" nemoralis Ait.	+	+	+	+	+	+
" " var. arenicola Burgess					+	
" patula Muhl.		—	+	+		+
" puberula Nutt.	+	+	+	+	+	+
" racemosa Greene	+	+	+			
" " f. leucantha Fernald		+				
" Randii (Porter) Britton	+	+	+	+		
" rigida L.				+	+	+
" rugosa Mill.	+	+	+	+	+	+
" " var. aspera (Ait.) Fernald	+	+		+	+	+
" rugosa var. sphagnophila Graves	+			+	+	+
" rugosa var. villosa (Pursh) Fernald	+	+	+	+	+	+
" sempervirens L.	+	+		+	+	+
" serotina Ait.	+	+	+	+	+	+

Solidago serotina, var. gigantea (Ait.)						
" Gray	+	+	+	+	+	+
" speciosa Nutt.		—		+	+	+
" squarrosa Muhl.	+	+	+	+		+
" suaveolens Schoepf		+	+	+	+	+
" tenuifolia Pursh	+	+		+	+	+
" ulmifolia Muhl.	+	—	+	+	+	+
" uniligulata (DC.) Porter	+	+	+	+	+	+
" " var. neglecta (T. & G.) Fernald.	+	+	+	+	+	+

Of the five introduced species in this list, none is well established in New England, and none of them may, at present, survive at any given locality.

Liatris spicata is a waif, reported once at Lawrence, Mass.; *L. pycnostachya* has been collected on a dump at Dorchester, Mass.

Grindelia squarrosa is an occasional weed in waste places; *G. robusta* was once found at Lowell, Mass.; *G. lanceolata* is reported from Greenwich, Conn.

Geographically, the genera here considered show a large proportion of southern species and a number of ranges which fit with some difficulty into the groups hitherto recognized by us. In order better to accomodate them, one of these groups has been changed; an area called "northern Maine" is, in this report, used in place of the "upper St. John" of the third report. It includes most of the state north of the 45th parallel of latitude. In a general way, this parallel may be said to lie along the southern border of the spruce forest, at least in the western half or two-thirds of the state, and so indicates a natural limit to the northward extension of many southern species. In the Penobscot basin, however, some of these species work further north in the strip of hardwood forest already referred to in these reports (Rhodora xxiii. 215); here the boundary of our area may have to be carried northward to an extent not yet definitely determined. "Cape Cod" of our third report we are now calling "southeastern Massachusetts" (a term more elastic and less likely to be misunderstood than the perhaps too definite "Cape Cod"), but without present change of boundaries. Finally, a third area, "southeastern Maine," here receives more attention than formerly. It comprises the corner of the state bounded by a line running from the coast west

of the mouth of the Union River roughly along the watershed of the Penobscot drainage basin to the St. Croix at about the northern boundary of Washington County. It includes all of this county and part of Hancock Co. It is well known for the occurrence on the cold headlands and islands along the coast of a little group of northern species not found elsewhere in New England. Inland it is for the most part a country of sterile soils; probably for that reason, it lacks a good many species otherwise of rather general distribution in southern and central Maine and even throughout the rest of the state. Species marked with an asterisk in groups I, II, III, V, and VI following are not known from southeastern Maine.

I. Generally Distributed.

Eupatorium perfoliatum
Solidago canadensis
Solidago graminifolia, var. Nuttallii
" juncea*
Solidago rugosa

Solidago canadensis has not been reported from Rhode Island, though occurring east and west of it, and in general becomes distinctly rarer in southern New England.

II. Generally distributed except in southeastern Massachusetts.

Eupatorium urticaefolium*
Solidago latifolia
Solidago serotina*

Eupatorium urticaefolium is, curiously, known from Rhode Island only as an escape from cultivation. The only records of *Solidago serotina* from northern Maine which we have rest on collectors' notes, not on specimens; its position in this group is, therefore, somewhat uncertain.

III. Neither northern Maine nor southeastern Massachusetts, rather general elsewhere.

Solidago arguta*

This species is rare in Maine and, except for its absence from southeastern Massachusetts, would go as well in group VI.

IV. Alpine.

Solidago Cutleri

Solidago macrophylla, var. thyrsoidea

This is the first time we have had to deal with strictly alpine plants in these reports; it may therefore be worth while to give the location of the small alpine areas of New England. They consist of the summit of Mt. Katahdin and the highest summits of the mountains of western Maine (Franklin and Oxford Counties), of the White, and of the Green Mountains. *Solidago Cutleri* is found in all four regions; *S. macrophylla*, var. *thyrsoidea* only on Mt. Katahdin and the White Mts.

V. Northern.

A.

Eupatorium maculatum

Solidago rugosa, var. villosa

Solidago squarrosa*

B.

Eupatorium maculatum, var. foliosum

Solidago lepida, var. molina

Solidago lepida, var. fallax

" macrophylla

Solidago Randii

Solidago squarrosa is peculiar in that it shows, in the southern part of its New England range, an apparent preference for calcareous habitats, being found in Connecticut only on trap and limestone ridges. Further north it exhibits no such peculiarity. The two varieties of *Solidago lepida*, described by Prof. Fernald in Rhodora xvii. 9 (1915), are very rare in our area. The former was found by Robinson and Fernald in 1901 at Ft. Fairfield, Aroostook, Co., Maine, and in 1917 was discovered by Nathaniel T. Kidder on Nathan's Island, near Isle au Haut in Penobscot Bay (Rhodora xx. 77–78 (1920). The latter was also found by Mr. Kidder on the neighboring York Island. *S. macrophylla* and *S. Randii* inhabit chiefly the hilly regions of the north, though the former reaches sea-level in Washington Co., Maine, and the latter occurs on some of the islands along the Maine coast.

VI. Southeastern Massachusetts and rather general elsewhere, but not northern Maine.

Solidago caesia*
" bicolor
Solidago nemoralis
" puberula
Solidago serotina, var. gigantea*

Solidago bicolor has been collected on the east branch of the Penobscot at about the 46th parallel, and *S. puberula* in the lower Mattawamkeag valley. *S. caesia* and *S. serotina*, var. *gigantea* are of more southern range than the others of this group. The former is not known in Maine east of the Penobscot valley, and the latter is placed in this group rather than the following only because it follows the valley of the Androscoggin into the White Mt. region, occurs in central New Hampshire, and is found on Mt. Desert Island.

VII. Chiefly the three southern States.

Mikania scandens‡
Vernonia noveboracensis†‡
Eupatorium aromaticum‡
" falcatum†
" pubescens‡
" purpureum
" rotundifolium†‡
" sessilifolium†
" verbenaefolium‡
Eupatorium verticillatum‡
Liatris scariosa‡
Solidago altissima
" erecta‡
" rugosa, var. aspera‡
" speciosa†
" suaveolens
" ulmifolia
" uniligulata, var. neglecta

The species marked with a dagger do not occur in southeastern Massachusetts; those marked with a double dagger are not known to us from Massachusetts west of the Connecticut valley. *Eupatorium rotundifolium* is exceedingly rare; we have seen specimens from Georgetown and Framingham, Mass., and Gray's Manual reports it from Rhode Island. The Manual record for *Solidago altissima* in Aroostook Co., Maine, was based on specimens later determined as *S. lepida*, var. *fallax*. This species occurs, however, at Falmouth and Brunswick in southwestern Maine and works its way north in the Connecticut and Passumpsic valleys to Caledonia Co., Vermont, and in the Champlain Valley, where it is frequent or even locally abundant, to the Canada line. *S. uniligulata*, var. *neglecta* extends north in western Vermont at least as far as Fairhaven and on the

Maine coast east to the region of Penobscot Bay. The ranges of these two plants, with that of *S. serotina*, var. *gigantea*, connect this group with the preceding. In the geographic, as in the taxonomic, classification of plants it is often impossible to draw exact lines of demarcation between groups. These essentially southern plants, though definitely avoiding the region of Canadian forest, show very various degrees of tolerance of severe climatic conditions, where they find otherwise favorable environment.

Solidago erecta, though known in our area only from a single station at Brewster on Cape Cod (Fernald), occurs there in dry woods on clay and gravel and seems to be in its southern range a plant of woods and hillsides of the Alleghanies rather than of the coastal plain; it is therefore placed in this group rather than the following.

VIII. Coastal Plain.

Chrysopsis falcata
Eupatorium hyssopifolium
" leucolepis
Solidago Elliottii
Solidago Elliottii, var. divaricata
" minor
" rugosa, var. sphagnophila
" tenuifolia

Solidago tenuifolia is found as far north and as far from the coast as Carroll Co., New Hampshire, and Limington, Maine. It follows the Naugatuck and Connecticut valleys inland, in the latter case as far as the sand-plains about Springfield, Mass.

Eupatorium leucolepis is known only from Kingston and Lakeville, Mass., and from Kingston, R. I. *Solidago Elliottii*, var. *divaricata* is known only from the type station on Block Island (Fernald, Long, and Torrey). *S. minor* is reported in Bicknell's "Flowering Plants and Ferns of Nantucket."

IX. Calcicolous Species.

Solidago calcicola
" canadensis, var. Hargeri
Solidago hispida
" racemosa
Solidago humilis

Solidago canadensis, var. *Hargeri*, is known only from central and western Connecticut and western Massachusetts and Vermont. Our only locality for *S. calcicola* is Limestone, Maine (Fernald). *S.*

racemosa grows in the crevices of slate and limestone ledges at scattered stations in the three northern states.

There is a pale yellow color-form of *S. bicolor* and a hybrid of this species with *S. puberula*. Some at least of the reports of *S. hispida* in southern New England are probably due to confusion with one or the other of these plants. *S. humilis* (as *S. uliginosa*) is reported in Dame & Collins, Fl. Middlesex Co., 49 (1888), as growing in peat-bogs at Concord, Mass. It is also reported from the Great Swamp of southern Rhode Island by E. S. Reynolds, in Rhodora ix. 117 (1907). As specimens are not available, and as individuals of *S. uniligulata*, var. *neglecta* with poorly developed inflorescence have often been mistaken for *S. humilis*, these reports have been omitted from our consideration as doubtful.

X. Western New England only.

Solidago patula Solidago rigida

Solidago patula, which flourishes in swamps in the calcareous areas of western Massachusetts and Vermont, as far north as Rutland Co., is by no means calcicolous in Connecticut, where it is well distributed as far east as the Connecticut Valley, with outlying stations in New London and Tolland Counties, and apparently pays no attention to the presence or absence of lime in the soil. It is reported from Manchester, N. H., in Batchelder's Flora, and from "western Maine" in the Manual, but these reports we have been unable either to verify or disprove.

S. rigida was once found as a waif (two plants only) in Framingham, Mass. It is abundant in several places on the western shore of Narragansett Bay in Rhode Island. It has been found at South Hadley and Sheffield in western Massachusetts and is occasional in southwestern Connecticut, with scattered stations eastward.

XI. Maritime Species.

Solidago asperula Solidago sempervirens

XII. Miscellaneous.

Solidago graminifolia Sclerolepis uniflora

Solidago uniligulata

The smooth-pedicelled *Solidago graminifolia*, as distinguished from the var. *Nuttallii* with hirtellous inflorescence, is a rare form, occurring at scattered stations in various parts of New England, except Connecticut. *Sclerolepis uniflora* is known only from a pond in Bradford, N. H., and from one on the boundary line between Massachusetts and Rhode Island. *Solidago uniligulata* has a rather distinctive range, which is not quite matched by any we have yet mapped, and which dovetails almost perfectly into the typical range of group IX. The calcicolous species of that group occur, in southern New England, almost wholly west of the Connecticut River; in the north they spread eastward through the calcareous areas of northern New Hampshire and central and northern Maine. *S. uniligulata*, a species of strongly acid meadow-bogs, is found, in southern New England, almost wholly east of the Connecticut and northward is almost confined to a belt about fifty miles wide along the Maine coast.

C. H. Knowlton
C. A. Weatherby
W. S. Ripley.

THE GENUS ERYSIMUM.

K. K. Mackenzie.

The description of Erysimum by Linnaeus in the fifth edition of the Genera Plantarum (p. 296) published in 1754 is as follows:

"729 ERYSIMUM* *Tournef.* 111.

"Cal. *Perianthium* tetraphyllum: *foliolis* ovato-oblongis, conniventibus, coloratis, deciduis.

"Cor. tetrapetala, cruciformis. *Petala* oblonga, plana, apice obtusissima: *unguibus* longitudine calycis, erectis.

"*Nectarifera* glandula duplex intra filamentum brevius.

"Stam. *Filamenta* sex, longitudine calycis: quorum *duo opposita* breviora. *Antherae* simplices.

"Pist. *Germen* lineare, tetragonum, longitudine staminum. *Stylus* brevissimus. *Stigma* capitatum, persistens, parvum.

"Per. *Siliqua* longa, linearis, stricta, tetragona, bivalvis, bilocularis.

"Sem. plurima, parva, subrotunda."

In the first edition of the Species Plantarum (p. 660) published in 1753 Linnaeus gave four species as follows: (1) *officinale;* (2) *Barbarea;* (3) *Alliaria;* (4) *cheiranthoides.*

Both the description quoted from the Genera Plantarum and the treatment in the Species Plantarum follow earlier works published by him before his introduction of the binomial system of nomenclature.

All recent authors refer the four species given under Erysimum by Linnaeus to four different genera. Tournefort had a very similar view, as he referred species No. 1 to *Erysimum;* No. 2 to *Sisymbrium;* No. 3 to *Hesperis;* No. 4 to *Turriis.*

The name Erysimum is a very old one for cruciferous plants and appears in most of the old works I believe. Very few if any of the earlier authors used the name without figuring or citing as *Erysimum* the plant we now know as *Erysimum officinale.* It is so figured for example by Pena & Lobel p. 69 (1570); Lobel Stirp. Icon. 206 (1581); Dodonaeus Pemptades 714 (1616); Parkinson Theat. Bot. 833 (1640); Morison Hist. Univ. p. 218 and tab. 3 sect. 3 f. 1 (1680). It is certainly to be regarded as the historic type of *Erysimum,* if the plant by far most generally considered as *Erysimum* is to be so regarded.

The first scientist to deal with *Erysimum* after 1753 as far as I know was Miller in 1754 (Gard. Dict. Abr. Ed. 4). He put five species in the genus. His first species is the same as the first species of Linnaeus (*E. officinale*). He treated as belonging to the genus *Erysimum* the plants treated by Linnaeus as *Sisymbrium Irio, S. polyceratium* and *S. Sophia.* In other words his conception of *Erysimum* is very much the same as the conception of *Sisymbrium* as given in Gray's Manual 7th edition.

Miller dealt with the other species placed by Linnaeus in *Erysimum* as follows:

He referred species No. 2 (*Barbarea*) to *Sisymbrium.*

He referred species No. 3 (*Alliaria*) to *Hesperis.*

He referred species No. 4 (*cheiranthoides*) to *Turritis* (Turritis leucoii folio).

Under the American Code of nomenclature the name *Erysimum* undoubtedly must be used for a group of plants to which *Erysimum officinale* is referred. In other words that species is the type of the genus.

The International Code of nomenclature requires that on the division of a genus "if the genus contains a section or some other division which judging by its name or its species, is the type or the origin of the group the name is reserved for that part of it." (Art. 45.) It also provides that in the case of the union of two groups of the same date a selection of a name for the combined group is to be made by the author first making the union, and that his choice cannot be changed by subsequent authors. Applying the first rule above referred to one would say that in view of Tournefort's plate cited by Linneaus and the long pre-Linnaean use of *Erysimum* for *E. officinale*, the International Code requires the use of the name *Erysimum* in the same way as does the American Code. Applying to breaking up a genus the same rule as the International Code applies to the union of two genera one would say that the International Code (if other provisions are not applicable) plainly requires us to follow what Miller did and apply the name *Erysimum* to *E. officinale*.

Under neither system of nomenclature is the use of *Erysimum* as it is used in Gray's Manual justified.

Maplewood, New Jersey.

NOTES ON DISTICHLIS.

Norman C. Fassett.

Many recent writers[1] have treated *Distichlis spicata* as a species of wide range on both coasts of North America and in alkaline places inland. Rydberg,[2] on the other hand, has treated the genus as having two species in the Rocky Mountains, *D. stricta* (Torr.) Rydb. and *D. dentata* Rydb., both distinct from the eastern *D. spicata*.

Careful examination of many collections of *Distichlis* has convinced the writer that *D. spicata*, common along the Atlantic Coast of North America, is on the Pacific Coast restricted to the region of Puget Sound, and that the plant generally distributed on the western coast and in the Rocky Mountains is a distinct species, *D. stricta*. This latter plant is of broad range, is polymorphic, and probably consists of a number of varieties.

[1] Hitchcock in Gray, Manual, ed. 7: 153–4 (1908); Britton & Brown, Ill. Fl. ed. 2: i. 250 (1913); Abrams, Ill. Fl. Pacific States i. 194 (1923); Small, Fl. Southeastern U. S., ed. 2: 152 (1913); Coulter & Nelson, New Man. Bot. Central Rocky Mts. 68 (1909).

[2] Rydberg, Fl. Rocky Mts., ed. 2: 72 (1923).

The compact panicles of *D. spicata* have from 10 to 20 spikelets, of which the pistillate are slightly firmer than are the staminate; these spikelets are rarely more than a centimeter in length. *D. stricta* has more open panicles, with 16 to 24 spikelets, which are from 1.2 to 2.5 cm. in length, firm and coriaceous in the pistillate plants, and papery in the staminate. The spikelets of *D. spicata* are from 4- to 9-, rarely 12-flowered, with lemmas rarely exceeding 3.6 mm. in length, while the 6- to 18-flowered spikelets of *D. stricta* have lemmas varying in length from 4.5 to 7.8 mm., except in a few plants, probably varietally distinct, which have lemmas ranging from 3.2 to 5 mm. in length. The grain of *D. spicata* is about 2 mm. long, ovoid, and not much narrowed below the two beak-like styles, while that of *D. stricta* is 2.5 to 5 mm. long, narrowed to an attenuate style, which is sometimes split, but hardly into two distinct styles as in *D. spicata*. The leaves of *D. spicata* are smooth-edged and blunt or oblique at the tip, while those of *D. stricta* are sharp-pointed and serrate at the tip. Specimens from the coasts of Washington, Oregon, and northern California have obscurely serrate leaf-tips and a grain only 2 mm. long, but otherwise resemble *D. stricta;* they probably constitute a variety of this species.

D. dentata Rydberg was described as differing from *D. spicata* and *D. stricta* in having broader leaves, spikelets, glumes and paleas, and dentate keels on the paleas. In all these characters *D. stricta* is extremely variable, and while the conspicuously dentate paleas appear at first to be distinctive, this character breaks down when it is seen that almost all of the plants have the lemmas somewhat dentate, and that there is a difference only of degree.

The synonymy, characters, and ranges of *D. spicata* and *D. stricta* may be thus summarized:

Distichlis spicata (L.) Greene, Bull. Cal. Acad. Sci. ii. 415 (1887), as to combination, not as to plant. *Uniola spicta* L. Sp. Pl. 71 (1753), as to plant, not as to Clayton synonym. *U. distichophylla* Roem. & Schult. Syst. ii. 596 (1817), not Labillardière, Nov. Holl. Pl. Spec. i. 21. t. 24 (1804). *Briza spicata* Lam. Enc. Meth. i. 465 (1783), not Sibthorp, Fl. Graeca i. 60 (1806). *Festuca triticoides* Lam. Ill. des Genres 191 (1791). *F. distichiphylla* Michx. Fl. Bor.-Am. i. 67 (1803); Pursh, Fl. Am. Sept. i. 84 (1814). *Distichlis maritima* Raf. Journ. Phys. lxxxix. 104 (1819). *D. nodosa* Raf. l. c. *Brizopyrum americanum* Link, Hort. Berol. i. 160 (1827). *B. spicatum* Hook. & Arn. Bot. Beech. 403 (1841). *Poa Michauxii* Kunth, Rev. Gram. i. 111 (1829) and ii. 533. t. 181 (1832), and Enum. i. 325 (1833).—Plants

1.5–4 dm. tall: leaves 5–15 cm. long, spreading or ascending, flat to involute, smooth on edge and tip (very rarely with a few scattered serrations toward the tip); tips bluntish, obtuse, or oblique; ligule a ring of very short hairs, rarely with a sparse tuft of silky hairs coming from the mouth of the sheath: panicles with 10–20 spikelets, cylindric, compact: spikelets 5–10(–14) mm. long, soft, the pistillate a little firmer than the staminate: first glume (0.4–)2–3.5 mm. long; second glume 2.5–4 mm. long; lemma 3.5 (–3.6) mm. long, the pistillate with a slightly differentiated hyaline margin, the staminate papery throughout; palea 3–4.5 mm. long, hyaline, firmer on the keels, which are minutely ciliolate; grain reaching 2 mm. in length, with two styles on the hardly narrowed top, not truly beaked; rudiments of the stamens minute in pistillate plants, the anthers represented by globular or sagittate heads; anthers 2–3 mm. long; the rudiments of the pistil very rarely present in staminate plants.—Salt marshes, Prince Edward Island to Florida; West Indies; Vancouver Island; South America; perhaps in western Texas.[1]

D. STRICTA (Torr.) Rydb. Bull. Torr. Bot. Cl. xxxii. 602 (1905). *Uniola stricta* Torr. Ann. N. Y. Lyc. i. 155 (1824). *U. multiflora* Nutt. Trans. Am. Philos. Soc. v. 148 (1837). *U. (Brizopyrum) flexuosa* Buckley, Proc. Acad. Nat. Sci. Phila. 1862, 99 (1862). *Distichlis maritima*, var. *stricta* Thurb. in Wats. Bot. Cal. ii. 306 (1880). *D. spicata* (L.) Greene, Bull. Cal. Acad. Sci. ii. 415 (1887). *D. spicata stricta* Scribn. Mem. Torr. Bot. Cl. v. 51 (1894). *D. dentata* Rydb. Bull. Torr. Bot. Cl. xxxvi. 536 (1909).—Plants 1–5.5 dm. high: leaves 2–15 cm. long, strongly ascending or somewhat spreading, flat or loosely involute, stiff or flexuous, usually strongly serrate on the edges and sharply pointed tips, often pubescent on the inner surface; ligules often with a copious tuft of hairs coming from the mouth of the sheath: panicle with 16–24 spikelets (except in some plants of the interior, probably varietally distinct, with 4–10 spikelets), long-cylindric, rather more open than that of *D. spicata:* spikelets 9–25 mm. long, 6–18-flowered, the pistillate hard and coriaceous, the staminate much softer; first glume 3.2–7.8 mm. long; second glume (2.1–)3–7 mm. long; lemma (3.2–)4–7.8 mm. long, the pistillate with a conspicuous, often broad and torn, hyaline margin; palea (2.4–)3–5.4 mm. long, the keels of the pistillate often ciliate, or even winged and dentate; grain (2–)3–5 mm. long at maturity, tapering to a beak, which is often notched or split; staminate rudiments minute in pistillate plants, the anther represented by a clavate, sagittate, or forked head; stamens 2–4 mm. long; rudiment of pistil present or absent in staminate plants.

[1] Sheets in the Gray Herbarium are labelled: "Collected in Expedition from Western Texas to El Paso, New Mexico, May–October, by Charles Wright, no. 783." Wright's records say of this number: "San Pedros, Devil's River, Declivity of hills; flowers purplish." The last two words certainly do not refer to the specimens in question, and the following note, bracketed from numbers 777 to 802, suggest that the labels may have become mixed:—"Some of these were spoiled during my sickness and thrown away."

—British Columbia and Saskatchewan to Arizona, New Mexico, and Oklahoma, and westward to the Pacific Ocean; introduced about railroad yards in Sheffield and Kansas City, Missouri. A very variable species in size, habit, and technical characters.

D. Palmeri (Vasey) Fassett in Johnston, Proc. Cal. Acad. Sci. ser. 4: xii. 984 (1924). *Uniola Palmeri* Vasey, Gard. & For. ii. 401. f. 124 (1899).—"Culms wiry and rigid, sometimes cane-like, two to four feet high, from subterranean root-stocks, often much branched, and many culms from one root, leafy to the top. Leaves distichous, (sometimes less than an inch apart, sometimes two to four inches apart), smooth, rigid, erect, involute, with a long, pungent apex, the lower two to four inches, the upper four to nine niches long and exceeding the panicle." Pistillate panicles much exceeded by the leaves, staminate plants with one or two leaves barely reaching the end of the panicle.[1] Ligule a very short collar-like ring of hairs, with a woolly tuft of hairs at the angles. "Raceme of the staminate plants six to nine inches long, narrow, the branches mostly in two's or three's, the lower ones one to three inches long, erect, compound below . . . Racemes of the fertile plant shorter, thicker and more condensed, being four to six inches long, and the branches sessile or short-stalked." Pistillate spikelets 2.5–3.5 cm. long, firm, with one or two empty lemmas; first glume 10 mm. long; second glume 12 mm. long; lemma 15 mm. long; palea 10 mm. long; grain plump, beaked, nearly 1 cm. long; staminate rudiments very minute in pistillate plants, 0.2 mm. long, apparently representing the filaments only; staminate spikelets 2 cm. long, less firm and narrower than the pistillate, without empty lemmas; anthers 4–5 mm. long; pistillate rudiment wanting in staminate plants.[2]—Salt marshes about the Gulf of California. Mexico: Horseshoe Bend, Sonora, April, 1889, *Dr. E. Palmer*, no. 924, 929; Head of Gulf of California, 1889, *Palmer;* Las Animas Bay, Lower California, May 8, 1921, *I. M. Johnston*, no. 3490.

Dr. Vasey says of this plant: "Its general appearance is that of a Distichlis, from which it differs in having four of the lower glumes (instead of two only) in each spikelet empty, i. e., without palet or flower, and in the disarticulation of the rachis between the spikelets of both sexes—that is, the spikelets break apart between the several flowers when mature. This disarticulation occurs also to some extent in the fertile spikelets of Distichlis, but not in the male or infertile ones. On the other hand it differs from Uniola in its dioecious character, and here it agrees with Distichlis."

The pistillate spikelets are coriaceous, while the staminate are soft and papery; the pistillate panicles are greatly over-topped by

[1] This type of sexual dimorphism is exhibited to some extent by all species of *Distichlis*.

[2] Description quoted in part from Vasey, l. c.

the leaves, while the staminate are short-exserted, as is usually the case in *Distichlis;* the pistillate spikelets have one or two empty lemmas as in *Uniola,* but the staminate spikelets are those of a *Distichlis:* these characters place this species unquestionably with the latter genus.

In regard to the anatomical characters of this grass, Holm says: "While engaged in studying the leaf-structure of *Uniola Palmeri* Vasey, I was well aware of the great similarity that exists between this species and the genus Distichlis in external characters of the inflorescence, the rhizome, and the rigid, densely 2-ranked, involute leaves. Now having examined the anatomy of the leaf in a number of species of Distichlis, the similarity between these two plants has been found to be so striking that it seems most natural to consider Uniola Palmeri as a true Distichlis. Professor F. Lamson-Scribner has informed me that on seeing the plant he immediately took it for a Distichlis and was unable to distinguish it from that genus."[1]

The large plump grains of this grass are eaten by the Indians, and Vasey gives an interesting account of their methods of gathering and preparing this food.

Distichlis **distichophylla** (Labill.) comb. nov. *Uniola distichophylla* Labillardière, Nov. Holl. Pl. Sp. i. 21. t. 24 (1804), not Roem. & Schult. Syst. ii. 596 (1817). *Poa distichophylla* R. Br. Prod. Fl. Nov. Holl. i. 182 (1810); Kunth, Enum. Pl. i. 325 (1833). *P. paradoxa* Roem. & Schult. Syst. ii. 569 (1817). *Festuca distichophylla* Hook. fil. Fl. Tas. ii. 127 (1858); F. Muel. Frag. Phyt. Austral. viii. 129 (1872–4); not *F. distichiphylla* Michx. Fl. Am.-Bor. i. 67 (1803); nor Pursh, Fl. Am. Sept. i. 84 (1814). *Distichlis maritima* Benth. Fl. Austral. vii. 637 (1878); not Raf. Journ. Phys. lxxxix. 104 (1819).

This species is only 1–2 dm. in height; the panicles have only 3–5 spikelets, which are 11–17 mm. in length; the grain is long-beaked, and is exceeded in length by the slender rudiments of the stamens; the leaves are 2–6 cm. in length, and closely spaced; the leaf-tips are long, slender, subulate, and very sharp, free from striations for a distance of from 0.5 to 1 mm. below the apex. *D. spicata,* on the other hand, attains a height of 4 dm.; the panicles have 10–20 spikelets, each only 5–10 mm. long; the grain is not beaked, but has two distinct styles, while the rudiments of the stamens are minute and much shorter than the body of the grain; the leaves are from 5–15 cm. in length, and are not as closely spaced as in *D. distichophylla;*

[1] Holm, Bot. Gaz. xvi. 275 (1891).

the leaf-tips are obtusish or oblique, and the striations of the leaf run to within 0.4 mm. of the apex. The low habit and few large spikelets make *D. distichophylla* of quite different appearance from *D. spicata*.

This plant is well illustrated by Labillardière, who shows a pistillate plant. A dissected floret is shown, however, with both pistil and well-developed stamens, a condition which does not obtain in nature.

D. distichophylla is reported from the coasts of South Australia, Victoria, Tasmania, and on the north coast of Queensland, also inland in saline places in the Grampian Mountains, Victoria.

Graduate School of Arts and Sciences, *Harvard University*.

The date of the March issue (unpublished as this goes to press) will be announced later.

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